



NTSB National Transportation Safety Board

Office of Highway Safety

Tunnel Inspections and National Standards

Tunnel Inspections

- No formal tunnel inspections were performed to the ceiling system (January 2003 – July 2006)
- Postaccident inspection revealed displaced anchors

Tunnel Inspections



Tunnel Inspections

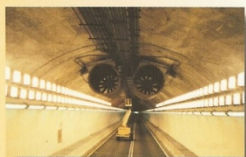
- *Inspection Manual for Tunnels and Boat Structures* November 2003
- Inspection manual not used
 - Develop database
 - FHWA review of the manual
 - MTA training
- Tunnel inspections conducted since the accident

Existing Guidance

2005



Highway and Rail Transit Tunnel Inspection Manual



U.S. Department of Transportation
Federal Highway Administration
Federal Transit Administration

- 5 years for new tunnels and 2 years for older tunnels
- National Bridge Inspection Program
 - Not to exceed 2 years

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Tunnel Inspections

- New tunnels are not immune to critical deficiencies
- Had MTA inspected the suspended ceiling between November 2003 and July 2006, the anchor creep would likely have been detected

Tunnel Finishes Standards

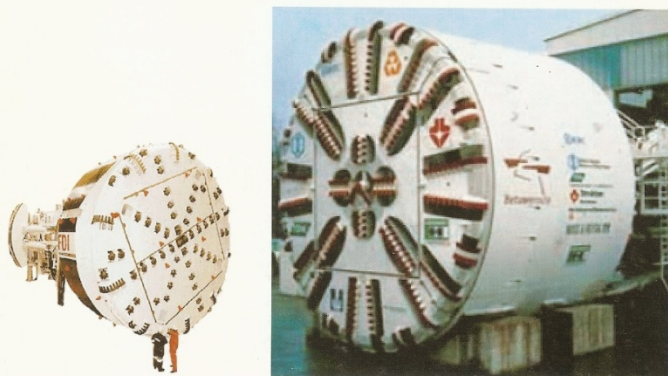
- Surveyed 9 tunnel authorities
- Ceiling panel dimensions and weights
- Anchorage systems used

Survey Results

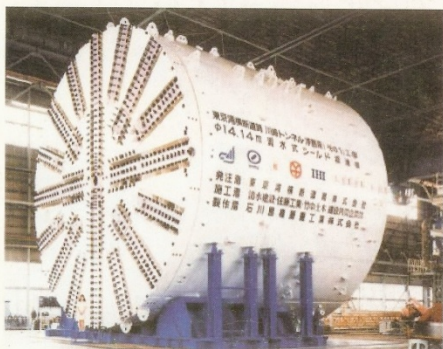
- Adhesive anchors seldom used to support ceiling panels
- Rarely installed in pure tension
- Typically support lightweight panels
- Mechanical anchors commonly used

Existing Standards

FHWA Road Tunnel



Design Guidelines



U.S. Department of Transportation
Federal Highway Administration



- Manual contains no standards on design of tunnel finishes
- National standards should be developed

Summary

- FHWA lacks legislative authority
- Seek legislation authorizing a mandatory tunnel inspection program
- Identify critical inspection elements and inspection frequency
- Tunnel design manual ensures uniformity and safety



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